MEMORANDUM

Date: April 22, 2019

To: Leiran Biton, US EPA Region 1 Air Quality Modeling

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Rachel Pachter, Vineyard Wind
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Subject: Vineyard Wind Project, Supplemental Information Requested by EPA Region 1, Construction and O&M Stage Modeling

INTRODUCTION

This memo provides supplemental information to support the completion of EPA's technical review of air quality dispersion modeling associated with Vineyard Wind's August 2018 Outer Continental Shelf (OCS) Air Permit Application. This memo responds to all outstanding information requests, specifically by providing:

1) Additional documentation that Project construction emissions will not impact any Class 1 Area, specifically:

    a. A CAMx-based analysis that shows that particulate matter impacts (PM_{10} and $PM_{2.5}$) will remain below Significant Impact Levels (SILs); and

    b. A summary of a CALPUFF analysis performed by Exponent that documents that nitrogen dioxide (NO_2) impacts will remain below SILs.

2) Additional documentation of how the annual modeled emission rates account for all the emissions proposed in the OCS air permit application for construction and O&M; and

3) Graphics showing the Significant Impact Area (SIA) associated with the maximum modeled O&M case for short-term NO_2, $PM_{2.5}$, and PM_{10} emissions. This is a graphical representation of information provided to EPA previously, showing that the SIA for all cases includes over-water areas only. The SIAs each have a radius of 1.5 kilometers or less and hence are at least

29 kilometers from shore. All modeled scenarios are below all National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments for all locations, including over-water areas.

Additionally, we identified an inadvertent over-estimate of emissions from transiting vessels during operations and maintenance (O&M). We are updating the application to correct the over-estimate to show that once the over-estimate is corrected predicted impacts decrease (with all results still showing compliance).

BACKGROUND

Vineyard Wind is in the late stages of federal, state, regional and local permitting for the nation's first large-scale offshore wind energy project. The 800 MW Project is located more than 30 miles from the mainland coast of Massachusetts in the northern portion of Vineyard Wind's Lease Area OCS-A 0501 (referred to as the "Wind Development Area" or "WDA"). Power purchase agreements for the entire 800 MW capacity are in place; the Project plans to begin initial onshore construction in late 2019. When fully operational in late 2021, the Project will generate clean, renewable, cost-competitive energy for over 400,000 homes and businesses across the Commonwealth, while reducing regional CO2 emissions by over 1.6 million tons per year.[1] The Project is also expected to reduce regional NOx emissions by approximately 1,050 tons per year (tpy) and regional SO_2 emissions by approximately 860 tpy.

The Outer Continental Shelf (OCS) Air Regulations (40 CFR § 55) differ from regulations for onshore stationary emissions sources because the OCS air regulations require inclusion of certain construction and supporting vessel air emissions when determining if a project is subject to air permitting as a major source of air emissions. Because certain construction vessel emissions are counted against the permitting thresholds, the Project is subject to permitting under the federal PSD regulations.

As explained in Section 1.2 of the August 2018 OCS Air Permit application, under the Clean Air Act, "any equipment, activity, or facility" that "(i) emits or has the potential to emit any air pollutant, (ii) is regulated or authorized under the Outer Continental Shelf Lands Act, and (iii) is located on the Outer Continental Shelf or in or on waters above the Outer Continental Shelf," is an OCS source regulated by the EPA's OCS Air Regulations. In addition, "emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or en route to or from the OCS source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source." 42 U.S.C. § 7627(a)(4)(C). During construction, Project OCS sources may include diesel generators used to supply power to the Wind Turbine Generators (WTGs) and the Electrical Service Platforms (ESPs) during commissioning, and compression-ignition engines on jack-up vessels

[1] https://www.vineyardwind.com/the-project

(while their legs are attached to the seafloor), anchored vessels, and vessels that are tethered to an OCS source. As described in the November 2018 air quality analysis of construction activities, the Offshore Export Cable Corridor (OECC) may use anchored vessels that could be considered OCS sources, but these potential emissions are significantly lower than offshore construction emissions. As documented in the Construction Air Quality Analysis, impacts from activities in the OECC were all below the Class I SILs.

Vineyard Wind submitted an OCS Air Permit application to EPA in August 2018, including an air quality modeling protocol. In November 2018 Vineyard Wind submitted an air quality analysis for construction activities and an air quality modeling report for operation & maintenance emissions, following the methods described in the protocol and feedback provided by EPA. On January 29th, 2019, EPA determined that the OCS Air Permit application was complete. The Federal Land Manager determined an Air Quality Related Values analysis for Class I areas was not required on March 29th, 2019.

1. DOCUMENTATION OF NO IMPACT TO CLASS I AREAS

The Construction Air Quality Analysis documented compliance with the PSD regulatory requirements in-part by showing that the temporary construction emissions will not impact any Class I Area. Class I Areas are geographic areas "recognized by the EPA as being of the highest environmental quality and requiring maximum protection." The nearest Class I area is more than 300 kilometers from the Project.

As described in the Construction Air Quality Analysis, EPA has historically relied upon SILs that represent thresholds of insignificant, i.e. de minimis, modeled source impacts. The SILs are small fractions of the health protective NAAQS and PSD increment. EPA has established specific SILs for comparison to the NAAQS and a separate set of recommended SILs for comparison to the PSD Increment. The PSD increment SILs are different for Class I, II and III areas. Details on the SILs used for this Project are further described in the Construction Air Quality Analysis in Section 2-2, Page 2-5. The nearest Class I area, Lye Brook, is 301 km away from any emission source in the WDA. Class II areas (i.e. Cape Cod and surrounding islands) comprise most of the United States. There are no Class III areas. The SILs for 24-hour $PM_{2.5}$, 24-hour PM_{10}, and annual NO_2 are restated here for ease of comparison in Table 1.

Table 1 Class I and II PSD Significant Impact Levels for 24-hour PM_{10}, 24-hour $PM_{2.5}$, and annual NO_2

Pollutant	Averaging Period	PSD Class I SIL Increments ($\mu g/m^3$)	PSD Class II SIL Increments ($\mu g/m^3$)
PM_{10}	24-Hour	0.3	5
$PM_{2.5}$	24-Hour	0.27	1.2
NO_2	Annual	0.1	1

The November 2018 Construction Air Quality Analysis documented maximum modeled impacts below the Class I SILs at Class I areas, using emission estimates that were conservative, both in how the total tons of emissions were determined and in the number of sources subject to OCS Air Permitting. Modeling of primary impacts was performed using the Offshore and Coastal Dispersion Model (OCD, v5), which is the EPA-approved model for over-water conditions. Modeling of secondary $PM_{2.5}$ impacts was performed using Project-specific concentrations developed from Comprehensive Air Quality Model with Extensions (CAMx) model results.

While all modeled results were below SILs at Class I areas, during its technical review EPA requested "supplemental information to screen for impacts at the approximate 300-km distance to the nearest Class I area" because predicted impacts extended beyond "the nominal 50-km distance at which the OCD model is formulated to address". This memo provides the requested supplemental information.

As described in the 40 CFR 51 Appendix W Guideline on Air Quality Models (the Guideline), there is no preferred model or screening approach for distances beyond 50 km. In situations where a long-range transport assessment is necessary, the EPA Regional Office shall be consulted to determine an appropriate and agreed-upon screening technique to conduct the second level assessment. The EPA Regional Office was consulted, and an alternative screening technique was agreed upon. This screening technique utilizes appropriate and technically credible relationships between the emissions of the Project and ambient impacts developed from an existing modeling study. This modeling was deemed sufficient by EPA for evaluating the Project's potential long-range impacts.

This supplemental analysis describes the alternative screening techniques that were utilized to screen for impacts at the 300-km distance to the nearest Class I area for particulate matter (24-hour $PM_{2.5}$ and 24-hour PM_{10}) and for annual NO_2. A CAMx-based analysis was used for 24-hr PM_{10} and $PM_{2.5}$; CALPUFF was used for annual NO_2.

1.A. SUPPLEMENTAL CLASS I SIL ANALYSIS FOR $PM_{2.5}$ AND PM_{10}

For the purposes of developing a Tier 1 Demonstration Tool for Ozone and Secondary $PM_{2.5}$, the EPA has performed modeling of a number of hypothetical sources using CAMx. This modeling was done throughout the United States using sources located at ground level (1 meter release height) as well as source types with 90 meter release heights. In addition to providing information about secondary

$PM_{2.5}$, EPA also modeled primary (without chemistry) PM_{10} and $PM_{2.5}$ impacts from these same hypothetical sources with surface (1-meter) releases of 100 tons per year (22.8 pounds per hour) of PM_{10} and $PM_{2.5}$. EPA has provided the results from this analysis at 300 km; this analysis uses those results, and addresses EPA's request that their use be properly supported, contextualized and combined with secondary impact values.

The approach above is an agency provided Tier 1 demonstration tool that uses existing technically credible and appropriate relationships between emissions and impacts developed from previous modeling, as described in section 5.2(e) of the Guideline. According to EPA, the use of this procedure constitutes valid and acceptable methodology to conservatively estimate PM_{10} and $PM_{2.5}$ impacts. The approach was selected through consultation with EPA and is consistent with EPA Guidance.

The air emission sources involved in the construction in the WDA are vessels and their engines. Generally the Project's engine exhaust parameters are favorable for dispersion with exit temperatures, exhaust release heights, and exhaust flow velocities higher than the source used in the CAMx modeling by EPA. The modeling performed by EPA assumes that the 100 tons of annual emissions is released from a single point, whereas this Project's emissions on any given day occur over several kilometers. This means applying the results from the CAMx modeling to this Project would be a conservative estimate as the Project emission sources are initially more spread out, and the exhaust parameters result in more initial dispersion than what was used in the EPA CAMx modeling. The EPA has provided the highest daily average PM_{10} and highest daily average primary $PM_{2.5}$ concentrations from a national subset of the hypothetical sources modeled using CAMx. Within this subset of hypothetical sources with surface (1-meter) releases of 100 tons per year of PM_{10}, the highest daily average PM_{10} concentration was 0.0193 $\mu g/m^3$, and the highest daily average primary $PM_{2.5}$ concentration was 0.0123 $\mu g/m^3$.

These concentrations can be used to conservatively approximate the concentration at 300 km from the Project by scaling the concentration by the tons per year for PM_{10} and primary $PM_{2.5}$ for this Project at 300 km. The $PM_{2.5}$ and PM_{10} emissions in the WDA for the peak year of construction are presented in Table 2, below.

Table 2 Construction Emissions in the Wind Development Area for $PM_{2.5}$ and PM_{10}

Pollutant	Tons/Yr
PM_{10}	102.3
$PM_{2.5}$	98

Total $PM_{2.5}$ can be quantified by adding the primary $PM_{2.5}$ to the Project's estimate of secondary $PM_{2.5}$ concentrations at 300 km (the distance to the nearest Class I area). Secondary concentrations reflect PM2.5 formed in the atmosphere by precursor emissions from the Project, and were developed using a CAMx-based analysis described in Section 4.7 of the November 2018 Construction Air Quality Analysis.

The Project's estimate of highest daily PM_{10} and highest daily $PM_{2.5}$ is shown in Table 3, below.

Table 3 Project Specific 24-hr PM_{10} and 24-hr $PM_{2.5}$ Impacts at the Nearest Class I Area

Pollutant	Project Emission Rate (tons/yr)	CAMx Modeled Emission Rate (tons/yr)	CAMx Modeled Peak Impact ($\mu g/m^3$)	Project Scaled Primary ($\mu g/m^3$)	Secondary ($\mu g/m^3$)	Total ($\mu g/m^3$)	Class I SIL ($\mu g/m^3$)	% of Class I SIL
PM_{10}	104	100	0.0193	0.020	N/A[1]	0.020	0.3	6.7%
$PM_{2.5}$	98	100	0.0123	0.0121	0.085[2]	0.097	0.27	36.0%

[1]Secondary impacts are not required for PM_{10}

[2] Secondary impacts are from Table 5-3 of the Vineyard Wind Construction Air Quality Analysis

The results in Table 3 clearly demonstrate that that the Project's daily PM_{10} and $PM_{2.5}$ emissions will not impact a Class I area during construction. As previously noted, the EPA modeling used to support this analysis is conservative in that it assumes emissions from a single point, with more limited plume rise than will be the case for the Project's construction vessel engine exhausts.

1.B. SUPPLEMENTAL CLASS I SIL ANALYSIS FOR NO_2

The CALPUFF model was used as a supplemental analysis to document that NO_2 emissions will not impact any Class I Areas during construction of the Project. CALPUFF is a Lagrangian model suggested by EPA as an option for the supplemental Class I SIL analysis for NO_2.

The three closest Class I areas evaluated include: Lye Brook Wilderness Area located in Vermont, Presidential Range – Dry River Wilderness located in New Hampshire, and Brigantine Wilderness Area located in New Jersey. Emissions were quantified for various construction sources associated with development of the Vineyard Wind Project in the WDA. The results of this modeling analysis were compared with the annual NO_2 SIL.

Maximum modeled impacts are summarized in Table 4, below.

Table 4 Project Specific annual NO_2 Impacts at Class I Areas

Class I Area	Maximum annual NO2 impact (µg/m3)	Class I SIL (µg/m3)	% of Class I SIL
Brigantine Wilderness Area	0.009	0.1	9%
Lye Brook Wilderness Area	0.004	0.1	4%
Presidential Range – Dry River	0.005	0.1	5%

The modeling results above demonstrate that construction activities are not predicted to cause an exceedance of the annual NO_2 SIL and therefore Project emissions of NO_2 will not impact any Class I Areas. Modeling details are provided in a separate report.

2. EXPLANATION OF HOW THE OCS PERMIT APPLICATION ANNUAL EMISSIONS FOR CONSTRUCTION AND O&M ALIGN WITH THE ANNUAL MODELED EMISSION RATES

The November 2018 modeling analyses used air emission rates that are consistent with the emission rates presented in the OCS air permit application. This section provides additional documentation that the modeling is consistent with the permit application.

Annual emissions as modeled during construction reflect the peak year (i.e. Year 1 emissions) of construction effort and include all potential construction activities that could occur during the peak year as well as transit emissions associated with those activities. Emissions in the WDA and OECC were modeled separately.

The tables below provide summations of the modeled annual emission rates for nitrogen oxides (NOx) and particulate. Table 5 provides the total modeled emissions for the WDA and Table 6 provides the total modeled emissions for the OECC.

Table 5 WDA Annual Modeled Emissions During Year 1 of Construction

Pollutant	Wind Development Area - Annual Modeling, Year 1 of Construction						
	Scenario 1-2 (g/s)	Scenario 3-7 (g/s)	Scenario 8-10 (g/s)	Scenario 11-12 (g/s)	Transits (g/s)	Total WDA (g/s)	Total Modeled WDA (tons/yr)
NOx	21.83	42.02	3.99	12.43	8.17	88.44	3,074.4
PM10	0.74	1.39	0.14	0.38	0.29	2.94	102.3
PM2.5	0.70	1.33	0.13	0.37	0.28	2.82	98.0

Table 6 OECC Annual Modeled Emissions During Year 1 of Construction

Pollutant	Offshore Export Cable Corridor - Annual Modeling			
	Scenario 8-10 (g/s)	Transits 8-10 (g/s)	Total OECC (g/s)	Total OECC (tons/yr)
NOx	7.98	0.25	8.23	286.1
PM10	0.28	0.01	0.29	9.9
PM2.5	0.27	0.01	0.28	9.6

Construction scenarios are described in the Construction Air Quality Analysis in Table B-2 and summarized below:

Scenario 1 - Scour Protection Installation
Scenario 2 - MP Foundation/ESP Installation
Scenario 3 - TP Installation
Scenario 4 - ESP Commissioning
Scenario 5 - Inter Array Cable Pre-lay Grapnel Run and Pre-Construction Survey
Scenario 6 - Inter Array Cable Lay and Pull
Scenario 7 - Inter Array Cable Burial and Termination
Scenario 8 - Export Cable Pre-Lay Activities
Scenario 9 - Export Cable Lay
Scenario 10 - Export Cable Burial
Scenario 11 - WTG Installation
Scenario 12 - WTG Commissioning

Table 7 below shows that the combined WDA and OECC modeled annual emission rates are greater than the total listed in the OCS Air Permit Application. Emissions were conservatively modeled using slightly higher emissions than what was requested in the OCS air permit application; this is an artifact of the rounding that is associated with distributing those emissions to discrete points for modeling purposes. For example, the total modeled emissions for NO_x was 3,360.5 tons per year which is approximately 6% higher than the 3,168 tons per year NOx emissions in the OCS Air Permit.

Table 7 Comparison of Total Annual Modeled Emissions During Year 1 of Construction

Pollutant	Total Modeled OECC + WDA Emissions Year 1 (tons/yr)	OCS Air Permit Application Year 1 (ton/yr)
NOx	3,360.5	3,168
PM_{10}	112.2	104
$PM_{2.5}$	107.6	100

A similar procedure was used to summarize the annual O&M emissions. Table 8 summarizes how each of the annual O&M scenarios were modeled, and shows that the combined modeled annual emission rates are greater than the tons per year listed in the air permit application. Electronic files of the emission rates for each of the modeling runs are provided as an attachment to this supplemental memo.

Table 8 Annual Modeled Emissions During O&M

Pollutant	O&M Annual Modeling				
	Scenario 18 (Daily O&M & misc.) (grams/sec)	Transits - (grams/sec)	O&M (grams/sec)	O&M Modeled (Tons/yr)	OCS Air Permit Application Annual (Tons/yr)
NOx	1.47	0.81	2.28	79.3	76.0
PM_{10}	0.05	0.028	0.08	2.8	2.6
$PM_{2.5}$	0.05	0.027	0.08	2.7	2.5

Again, emissions were modeled using slightly higher emissions than what was requested in the OCS air permit application, reflecting the rounding associated with distributing emissions to discrete points. Therefore, the modeling inputs are appropriate and consistent with the application.

3. MAPS DEPICTING THE EXTENT OF THE SIGNIFICANT IMPACT AREA FOR O&M

EPA has requested submittal of figures showing the geographic extent of the SIA for O&M pollutants and averaging times where maximum predicted impacts exceed the SIL. Because (per below) the corrected annual impacts are substantially reduced, the Project does not exceed SILs for annual impacts.

Maps have been prepared showing the SIA for 1-hour NO_2, 24-hour PM_{10} and 24-hour $PM_{2.5}$. The SIA for these pollutants is 1.0, 0.5 and 1.5 kilometers respectively. These areas are entirely over water, in locations where there cannot possibly be any residences, and where the public is unlikely to remain for any extended period. The impacts are at least 29 kilometers from any onshore area, and (as described in the O&M Air Quality Report) all modeled scenarios are below all NAAQS and PSD increments for all locations, including over-water areas.

4. UPDATED MODELING TO CORRECT IN-TRANSIT EMISSION RATES DURING O&M

A correction was made to the transit emissions for vessels associated with daily O&M. These vessels were inadvertently modeled with an emission rate for annual NO_2, $PM_{2.5}$, and PM_{10} that was a factor of 100 too high. These emissions were corrected in the attached spreadsheet and in the attached modeling during O&M for the annual NO_2, annual PM_{10}, and annual $PM_{2.5}$. Table 5-1 of the O&M modeling report is updated in redline as an attachment to this memo, showing substantial reductions in the predicted annual impacts. As a result of this modeling, the Project modeled impacts are now below the Class II SILs at all locations for annual NO_2, annual PM_{10} and annual $PM_{2.5}$. Because the annual NO_2 impacts are now below the SIL, PSD increment modeling is no longer required and the PSD increment model results are removed from Table 5-3 in the attached redline. We have also corrected the Significant Impact Radius for 1-hour NO_2 in Table 5-1, and a typo in the Table 5-2 footnote.

CONCLUSION

We trust that the information provided in this memo and its attachments satisfies EPA's requests and allows for completion of the technical review of the air quality dispersion modeling aspects of Vineyard Wind's OCS Air Permit Application. The information provided here reinforces the prior modeling conclusions that construction emissions will not impact Class I areas and that impacts during O&M will not cause or contribute to any violation of ambient air quality standards.

Please feel free to contact us with any questions on this memo.

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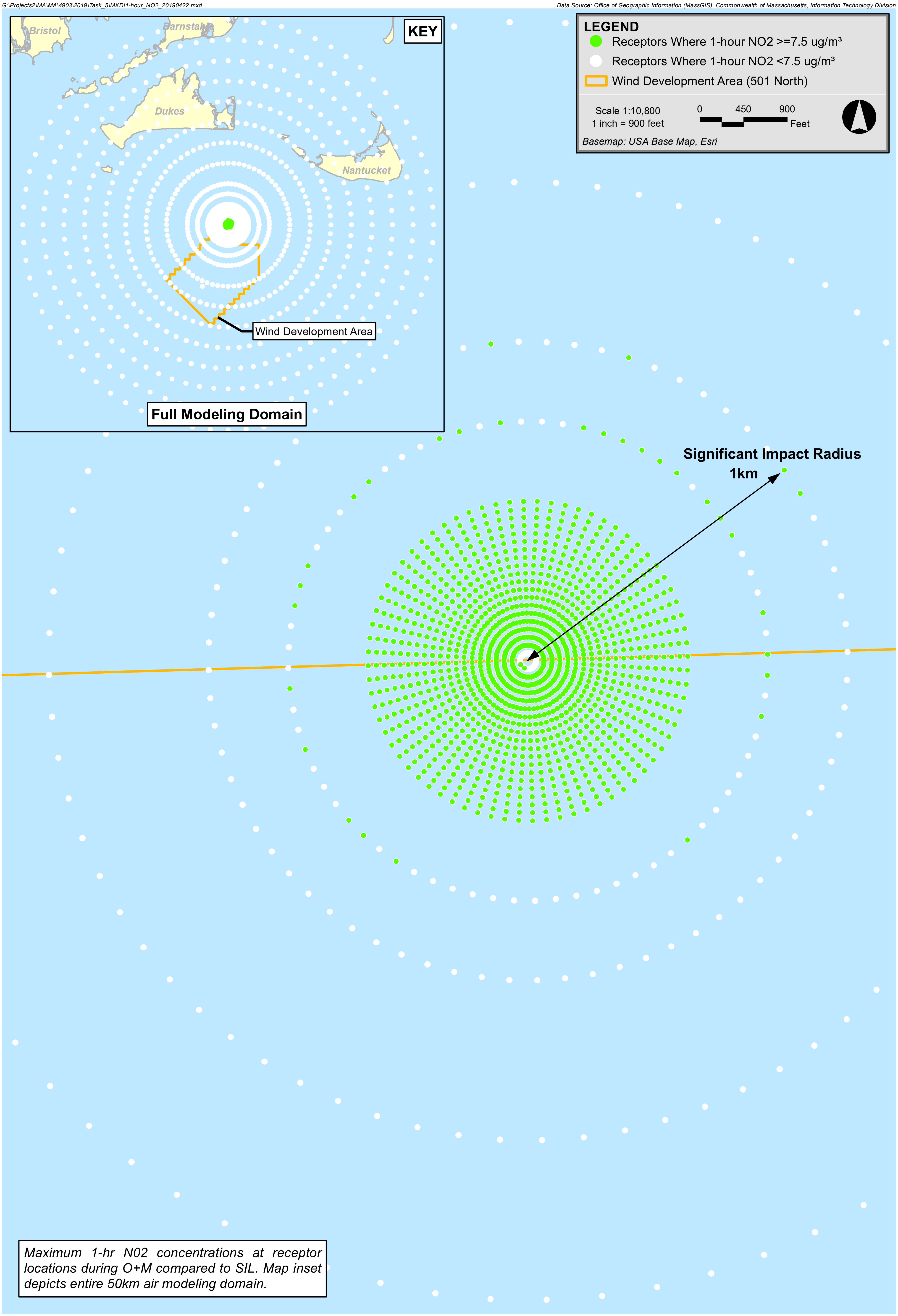
Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division



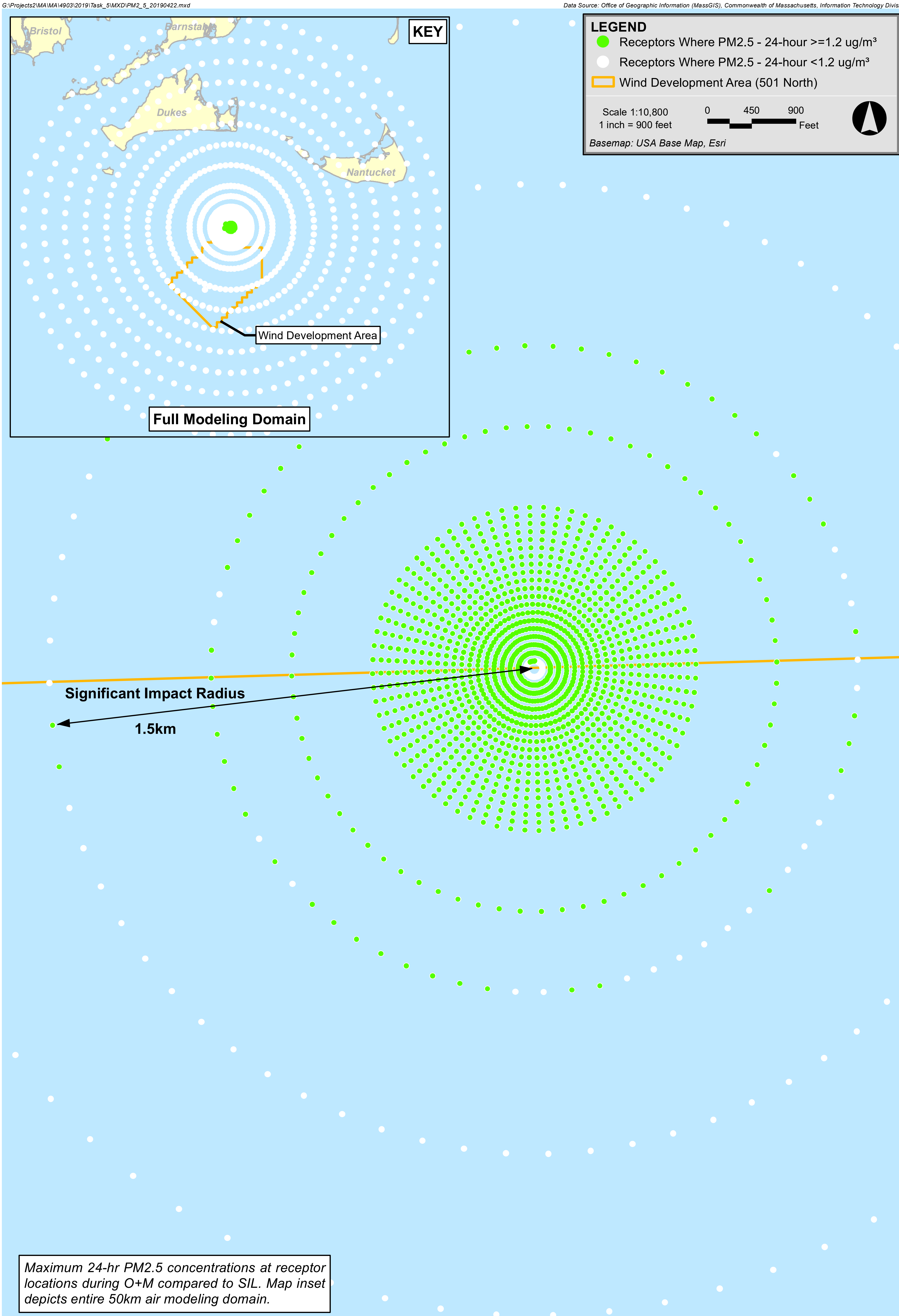
Vineyard Wind Project

VINEYARD WIND

Figure 1

Modeled Significant Impact Area for 1-hour NO2

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division



Vineyard Wind Project

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Figure 2

Modeled Significant Impact Area for PM2.5 - 24-hour

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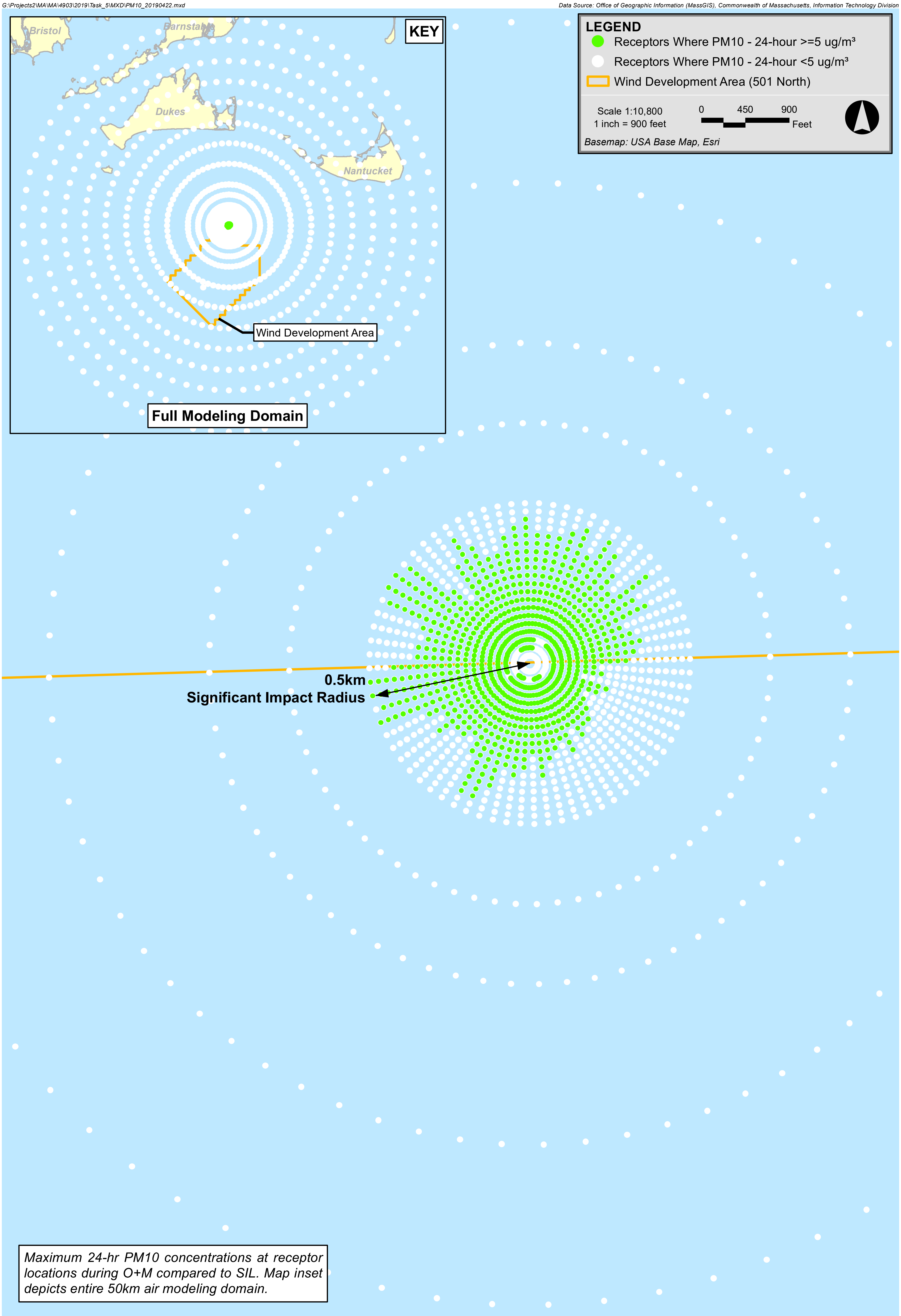
Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division



Vineyard Wind Project

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Figure 3

Modeled Significant Impact Area for PM10 - 24-hour

Table 5-1 Significant Impact Level Modeling Results During O&M

O&M SILs Summary										
Poll.	Avg. Time	Scenario	Year (Julian day, hr)	Class II SIL (ug/m^3)	Conc. (ug/m^3)[1]	% of SIL	Receptor ID	X-coordinate	Y-Coordinate	Significant Impact Radius (km)
NO_2	1-hour	Scenario 16	2013	7.5	23.84	318%	MC2804	131.111	112.207	~~0.25~~1.0
	Annual	Scenario 13-16, 18, + Transits	2015	1	~~13.74~~ 0.234	~~1,374%~~ 23.4%	~~MC2383~~ MC72	~~129.769~~ 132.00	~~112.743~~ 122.07	~~25.0~~ N/A
PM_{10}	24-hour	Scenario 18	2017 (187, 24)	5	22.13	443%	MN2124	133.379	123.114	0.50
	Annual	Scenario 13-16, 18, + Transits	~~2015~~ 2013	1	~~0.52~~ 0.01	~~52~~ 1%	~~MC2383~~ MC351	~~129.769~~ 135.95	~~112.743~~ 117.85	N/A
$PM_{2.5}$	24-hour	Scenario 18	2017 (187, 24)	1.2	21.44	1787%	MN2124	133.379	123.114	1.5
	Annual	Scenario 13-16, 18, + Transits	~~2015~~ 2013	0.2	~~0.49~~ 0.01	~~24~~ 5%	~~MC2383~~ MC351	~~129.769~~ 135.95	~~112.743~~ 117.85	~~10.0~~ N/A
CO	1-hour	Scenario 18	2013 (229, 5)	2,000	411.4	21%	MN403	133.562	123.173	N/A
	8-hour	Scenario 18	2017 (187, 24)	500	279.27	56%	MN2124	133.379	123.114	N/A

1 NO_2 1-hr emission value is H1H concentration adjusted by multiplying it by the ARM2 factor obtained from the NO2 ARM2 Post Processor. NO_2 Annual emission value is scaled by an ARM2 factor of 0.9.

Table 5-2 NAAQS Comparison Modeling Results During O&M

O&M NAAQs Summary											
Pollutant	Avg. Time	Year (Julian day, hour)	NAAQS ($\mu g/m^3$)	Standard	Conc. (ug/m^3)	Background (ug/m^3)	Total Conc. + Background (ug/m^3)	% of NAAQS	Receptor ID	X-Coordinate	Y-Coordinate
NO_2	1-hour[1]	2016 (144,3)	188	H8H	25.0	83.4	108.4	58%	MC1364	131.15	112.01
PM_{10}	24-hour	2013 (253, 24)	150	H6H	11.3	33.0	44.3	30%	MN247	133.59	123.28
$PM_{2.5}$	24-hour	2013 (253, 24)	35	H8H	5.45[2]~~[3]~~	14.2	19.7	56%	MN246	133.58	123.26

1 NOx value is the max of the five year H1H concentrations adjusted by multiplying it by the 1-hr ARM ratio resulting from the ARM postprocessor spreadsheet provided by EPA.
~~2 NOx value is H1H concentration adjusted by multiplying it by a 0.9 ARM2 ratio~~
3 $PM_{2.5}$ value is combination of primary and secondary impact analysis.

Table 5-3 PSD Increment Modeling Results During O&M

O&M PSD Increment Summary									
Pollutant	Averaging Time	Year (Julian day, hour))	Standard	PSD Increment ($\mu g/m^3$)	Concentration ($\mu g/m^3$)	Percent of PSD Increment	Receptor ID	X-coordinate	Y-Coordinate
~~NO_2~~	~~Annual[1]~~	~~2015~~	~~Annual~~	~~25~~	~~13.74~~	~~55%~~	~~MC1364~~	~~131.15~~	~~112.01~~
PM_{10}	24-hour	2016 (324, 24)	H2H	30	18.45	62%	MN1442	133.51	123.05
$PM_{2.5}$	24-hour	2016 (324, 24)	H2H	9	8.94	99%	MN1442	133.51	123.05

~~1 NOx concentration value is H1H concentration adjusted by multiplying it by a 0.9 ARM2 ratio~~